ORGANOLOGY AND PHILOLOGY OF AN URUKEAN LUTE* (?)

Richard Dumbrill

1 Introduction

In 1996 my distinguished colleague and friend Doctor Dominique Collon informed me that the British Museum had acquired a new cylinder seal dating from the Uruk period[1], about 3200 to 3000 B.C. (Fig. 1) Henceforth 'A', on which there would be the depiction of an individual, perhaps a woman on account of the hair style, sitting at the back of a boat and holding a long-necked implement[2]. The device was initially identified as a long-neck lute type, 'LNLT' henceforth, because of later Akkadian representations, from about 2334 to 2193 B.C. (Figs. 2, 2a and 3, 3a)[3] of similar implements which had previously been identified as such.

Collon initially thought that the Uruk implement would also be a long-necked instrument a LNLT, although a soundbox was not clearly delineated[4]. (Fig. 4a) Then my learned friend revised her opinion on the basis that the seal would have been reworked, certainly in ancient times and though not quite a palimpsest, there were significant alterations to what might have been the original scene, in style as well as in its execution. (Fig. 5) However, Collon remained ambiguous in her statement as she later added that the re-cutting was probably recent as were the various scratch-marks on the surface of the soft stone. She added that she did not believe that the seal was an outright forgery and that everything indicated that the re-working of the underlying worn shapes was made around 3100 B.C. It was not really clear what Collon meant by 'recent'. If she considered 3100 B.C. as being 'recent' in the Uruk Period, or if the 'recent' at the beginning of her statement addressed to modern times.

Consequently the dating of the object became unsafe. There was also another critical argument which advanced that the implement might have been a paddle and not an instrument although the hand positions and the general posture of the musician did not fit in with the usual paddling posture.

Unscientifically, I had wishfully imagined the outlines of a hypothetical round sound-box which Yumiko Higano drew on my request (Fig. 4c) but I must confess that at that time I relied on the flimsy evidence from other seals with elusive LNPT instruments played by either bow-legged children or bow-legged dwarfs, a bit like fashionable 'air-guitar playing'. (Figs. 6, a, b, c, d, e and f) During the ICONEA 2011 conference Ricardo Eichmann objected to my hypothesis and disagreed with my views on the implement both with dating and representation. However I remained certain that long-necked plucked-string instruments would have existed at the Uruk period, and even before.

This paper will defend my postulation that the depiction on the seal is probably that of a stringed instrument on grounds of iconography, organology and philology. Furthermore, it is my contention that the location of the instrument in the organological chain of instrumental evolution would logically place it during the fourth millennium.

2 Organological morphology of stringed instruments

Firstly, the organological characteristics of these instruments must be clearly defined. There are two principal types of stringed instruments.

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* The author has placed his illustration at the end of the article for two reasons. The first is to preserve the flow of the text, and the second because most of the readers will already know the illustrations to which the author refers.

Harps and lyres types are mono-polyheterochord instruments while lute types can be polytonal-monoheterochord or polytonal poly-heterochord instruments. This means that while harps and lyres usually have many strings the nature of which being of a different matter from its body (heterochord), and are therefore polyheterochord instruments, as each of their strings produce only one pitch. Therefore they are mono(tonal) types of polyheterochord instruments.

Lute types are instruments where the string (in monoheterochord instruments) or strings (in polyheterochord instruments) produce more than one pitch [poly(tonal)]. This is the consequence of the 'stopping' or of what is wrongly termed the 'fretting' of a string[5]. This is done by pressing (stopping, fretting) the string at a given point, with the finger (or with other devices), against a straight and flat, sometimes slightly curved, surface of the instrument called the finger-board, or fret-board which runs along and under the length of the string. Whereas lyres are mostly trapezoidal in shape; harps are all triangular and lutes oblong with (or without) added sound-boxes or resonators, developing in size with time, becoming very large with the Arabian Mediaeval *'ūd*, forerunner of the Renaissance and Baroque lutes. However, another instrument type, the tube-zither, well-known to ethomusicologists has been ignored by all scholars having written about the seal under scrutiny, and others.

3 Comparative Organology

If most of my colleagues who are in doubt that the implement depicted in 'A' is a LNLT on the basis that there is no visible sound-box, then I would suggest that they have another look at figure 2a, 'B'. (Fig. 2a) There is no sound-box to be seen. However, there is an inscription which is a rare occurrence. It reads **UR.UR/nar** meaning '(Mr.) Urur, singer'. This does not help in identifying the instrument he is playing. Mr. Urur's depiction and name seem to have been added to a previously engraved seal bought 'off the shelf'. The identification of a LNLT 'B' on figure 2a was made on the basis that the depiction on figure 3 and 3a, 'C' shows some kind of horse-shoe shape which would be, most probably, a sound-box. On this seal, the musician is certainly part of the original composition unlike with Mr. Urur's. Had we not found 'C', then it would have been impossible to say if 'B' represented a LNLT. Thus its identification as a LNLT rests uniquely on the positive identification in 'C'.

Therefore we have a subjectivist dilemma. While some feel quite satisfied that the instrument in 'B' is a LNLT, even if there is no evidence of sound-box, but that at the same time reject the hypothesis that 'A' could be a LNLT because it has no sound-box, is bewildering. Their arguments are as follows: a) Because there are no other occurrences of a LNLT during the Uruk period, therefore the implement cannot be one. b) Because the individual in 'A' is sitting at the back of a boat, it is more likely that she/he is handling a paddle rather than a LNLT. c) Because there is no evidence of a sound-box, it cannot be a LNLT.

There is not much logic in all of this as it is not necessarily a typical LNLT that is represented either in 'A' or in 'B'. On the other hand, it is highly probable that 'C' is a LNLT. If the implement depicted in 'A' and 'B' are not LNLTs, what could they be. Are they musical implements at all? We may assume that if 'B' identifies a musician because he is probably holding an instrument.

It is my contention that we have been misguided in expecting that a LNLT should necessarily be fitted with a sound-box.

The tube-zither might have been the ancestor of the instrument, especially at Uruk where canes abound. They are hollow, and their cavity would have constituted the soundbox of the instrument which therefore did not need a dedicated typical hemispherical sound-box or resonator placed at its lower end. There is another organological parallel with early Uruk harps. They too were mono-structural as there is no organological distinction between sound-boxes and yokes (Fig. 7a, b, c and d) and in many ways, tube-zithers, (Fig. 8) from which stemmed the LNLT are similar since both are made up of a hollow structure; both have plucked strings with their frequency amplified by similar hollow mono-structures.

The major difference, besides one being curved, the other straight, is that with harps, strings 'pull out' the soundboard in extraction while with LNLTs, string vibrations are transmitted to the hollow structure by means of a bridge by compression of the soundboard. (Fig. 9a, and b)

4) What would an Uruk tube-zither look like?

The simplest form of tube-zither would consist of a cane, probably *arundo donax*, cut to an appropriate size, about 60 centimetres long with a diameter of about 2 centimetres. A string of gut, vegetal or animal hair fibre would be stretched from one end to the other and attached with a knot inserted into a thin slit, at each end. An archaic form of bridge would be placed where suitable and would add tension to the string. In the course of evolution the bridge would have been inserted into a carved groove. (Fig. 10) This probably happened when musicians became urban dwellers and needed to be in tune with one another. The longer the speaking length of the string, the smaller would have been the intervals, in a comfortable finger position. (Fig.12) It is very probable that earlier instruments were short or that the bridge was placed near the middle of the instrument to allow for larger intervals with a suitable finger position. The ideal speaking length would be about 30 centimetres as this would allow for playing a fourth, a fifth and smaller tone and semitone intervals.

During the early Uruk Period, or the Protohistoric Chalcolithic, the concept of sound-boxes, or resonators as amplification devices was unknow[6]. Therefore their absence on tube-zithers is no more surprising than their absence on harps which at that time were mono-structural and probably monoxylous. With regard early Uruk lyres, which appear to have sound-boxes, as there is no evidence that they were hollowed-out, I contend that they were a later development of the LNLT. I further contend that they were the consequence of both zoomorphic/totemistic and structural causes. With time and in respect of the materials used for its construction, luthiers, much later, realised that there was a relationship between volume and timbre.

Some would argue that the early tube-zither would have had little sound volume. My own experimentation proves that to the contrary, it would have been as loud as 18th century clavichords, J.S. Bach's favourite instruments.

5) Sumerian **gù.di** *and Chinese gŭdí?*

Reductio ad absurdum, a common form of argument which seeks to demonstrate that a statement is true by showing that a false, untenable, or absurd result follows from its denial, or in turn to demonstrate that a statement is false by showing that a false, untenable, or absurd result follows from its acceptance.

During the ICONEA 2011 conference, I apposed Sumerian **(giš) gù.di/dé** = Akkadian *inu*, to Chinese gŭdí, meaning 'bone-flute' which is the oldest known musical instrument from Jiahu in China[7], dating back to around 6000 B.C. (Fig. 12) The word for bone is 'ku', a determinative, and the substantive for flute is 'di'. Stuck together they ended up as the word 'gŭdí'.

Irving Finkel immediately questioned my sanity as indeed any relation between them is absurd. Or is it?

For most of my career I have advocated that Neanderthalian and later holed pipe flutes could not have played any predetermined scale on the basis of absence of numeracy. Indeed I wrote and taught that without ratios, the calculation of hole positions was impossible. Neanderthalians, later Cro-Magnons, Jiahu Chinese and others might have drilled holes on their pipes but the scales produced would have been aleatory. With my own hypothesis of the tube-zither, I have proved myself wrong.

The position of the fingers on the tube-zither string define the position of holes on the pipe flute. (Fig. 13) However, the precision of pitches for the last two holes, at the treble depends on the height of the bridge, as the higher it is the greater the tension on the string when pressed onto the fingerboard and therefore the greater the pitch deviation. The four first holes produce a filled fifth, a reasonable span for that period. The pipe was cut at the level of the bridge since this is what defined its speaking length. This is where the pipe was blown. Obviously the flute would not have been tuned at the same pitch as the tube-zither but most importantly, the interval ratios would have been the same in both instruments. Then the tube-zither might have been tuned to the pipe, as the pipe could not be tuned to the zither. The problem was solved. This explanation might provide an explanation, never explored before, on how the earliest pipe flutes such as the Jiahu models might have been drilled and produced coherent and predetermined scales. Therefore it can be hypothesized that tube-zithers might have been much older than initially thought. None survived because cane decays fast. On the other hand, bone of which pipes were made, much more resistant to erosion, would account for their discovery at various sites[8].

After all, Sumerian **gù.di** and Chinese gǔdí have a lot in common!

6) Philology

There has been many attempts at sourcing the LNLTs. Stauder thought Highland foreigners[9] brought them to Mesopotamia. There were many other propositions arising mainly from the iconography. However, many other instruments have not survived the erosion of time, and others were represented only later in the course of history, such as the LNLTs, when they became worthy of depiction and inscription, having reached, perhaps, temple, palatial or urban status at a level which needs to be appreciated. Copulation was even depicted in their context.

It is only recently that philologists[10] have surmised that Sumerian **giš.gù.di**, Akkadian *inu*, are words to equate with the LNLT[11]. The Chicago Assyrian Dictionary gives *inu*[12] as 'talking, or noise-producing stick or wood'.

A series of lexical texts[13] mentions stringed instruments divided into two sections. In the first part[14] we have numerous names of different types of harps, lyres, sound-boxes of percussion instruments and their various pieces. The second part[15] has wooden objects which can be described as functional poles and sticks, with special items at one or both ends such as crutches, goads, stocks and staffs. It includes the Sumerian **giš.gù.di**, or **giš.gù.dé**. Another list[16] has Sumerian words of the **giš.gù.di** family connected with the LNLT and related to both its structure and playing.

An unpublished fragment[17] gives *inu* as **giš.sa.3** implying that this instrument was fitted with three strings. With regards to line 132 the number does not, obviously, refer to an instrument with 30 strings but rather to their speaking length. This variation would probably have indicated that this lute had strings of a speaking length of 30 *ubanātu*, which is about 50 cm. One lexical text[18] has the entry: **GIŠ gi-eš-gu-da GÙ-DÉ** = *inu* which heads a list of musical terms preceding the Akkadian verb *zamaru* 'to sing' and in another[19], **GIŠ gù-di** and **GIŠ dù-a** are mentioned along with 89 other organological theoretic words[20]. Another list[21] has: **mu.gù.dé** = **giš.gù.dé** = *inu*.

Ḫḫ VIIB 117-134

117 **giš.gù.dè**		
118 **giš.SAR**		
119 **giš.ù.lú.DU/ša**$_4$	= *inu*	'song-maker'
120 **giš.gaba.gub**	= *inu*	'breast-stander'
121 **giš.šu.galam.ma**		'hand-descending'
122 **giš.sa.šu**	= *inu*	'covered/fretted-string'
123 **giš.ùr**	= *inu*	'leg'
124 **giš.u**$_5$	= *inu*	'rider'
125 **giš.i.nu**		'to revere the statue'(?)
126 **giš.dù.a**		'knowledge'(?)
127 **giš.dím**		'for creation'(?)
128a **giš.dim**		'**DIM** *risku* ligature/fret'(?)
128b **giš.bal**		'royal seal'(?)
128c **giš.á.gá**		'side-placed'(?)
129a **giš.tún**		'deep/bass'(?)
129b **giš.sikil**		'clear'
130 **giš.gal**		'large'
131 **giš.šu.gal**		'big hand'
132 **giš.gal.30.àm**		'30 big'
133 **giš.gù.dé.ša.u**$_{18}$**ša**$_4$		'**sausa** sound. Plucked'?
134 **giš.gù.dé.ša.u**$_{18}$**ša**$_4$ **gú-gar.ra**		'shoulder-placed-plucked'(?)

The term is also present in another[22] as: *pi-it-nu [ta-p]a-lu, [x-x]-xlu,[i]-nu.* But the Sumerian column is broken. Another[23] has **giš.gù.dé tag.tag.** **[ga.zu]**: (text *gan*)*-nu lap-tu-ka* which translates as: 'when you pluck the *inu*' and another[24] has: **giš.bal.ki.š.r.ra mu**(var.**mi**)**.ni.in.gar**: *ina-an adi[ša]-ri iškum.*

The oldest text mentioning the **giš.gù.di** is the Gudea Cylinder A VI4 where Shulgi ruler of Ur, 2094-2047 B.C., in the self-laudatory Hymn B[25], writes:

> 'I, Shulgi, the king of Ur, dedicated myself also to music; nothing related to it was too complex for me. I penetrated the depth and width of the consummate musical training of the **tigi** and **adab** compositions. The **šu-kár** instrument, to appease the heart in anger, and in their preparation I did not bungle anything; by pondering and striving I succeeded in fixing their rules. I learnt the sweetness of the string thirty[26] instrument and to the **zàmí**, the 3-string instrument and the essence (heart) of the musical craft, the great **šà-ša**$_4$, the **algar**, the *sabîtum* (which) are of the ruler's rite, I taught the herald their fingering. I taught/knew how to pluck the strings of the *mirîtum*. The **Urzababa** instrument, the *ḫarḫar*, the *zanarû*. The 'Big Dog', the **giš-dìm**, that give sounds like (the cries of) the boatmen. A son of a musician, with a pure hand, made (them) for me. The **gù-di** instrument that had never been played (before by me), when it was . . . brought to me, Of that very instrument I divined its secret, I was able to set in order as something that had ever been in my hand; whether to loosen or to fix the strings on it did not escape (the ability of) my hand.'

The Akkadian word *inu* is much isolated. We do not trace it in any other Semitic language and it seems that it was known only under its Sumerian equation of **giš.gù.di**. On the other hand it is possible to see some similarity with the Sanskrit/Hindi *vînâ*, which is a long-necked and fretted lute equipped with a resonator as would have been the case with the earliest form of the instrument from Mesopotamia.

Al-Farabi mentions an instrument, the Arabian *šarūdh* which we find in India under the name of *sarod*, as the favourite of the Arabs. It was the invention of a certain *Hulays Ibn al-Ahwas* who lived in the mountains around Samarkand. According to *Fārābī*, the instrument was invented in the country of *Maẖ* in the year 1228 of the Alexandrine era, that is the year 306 of the Muslim Arabs. There is a drawing in a copy of the manuscript but it makes no sense. Vüllers' Persico-Latinum Lexicon defines the *šarūdh* as the 'King of the rud', that is the best of the instruments of the 'rud' family. The word *'rud'* comes from the Sanskrit *'rudrī'* [27] which means 'stringed instrument' and shares some homophony with Sumerian **gù.di**.

The word spreads on the one hand via the Indo-European medium into the Spanish *'rota';* French *'rotte';* Welsh *'crwth'*, etc., and on the other, via the Semitic medium, into Arabic *'ʿūd';* Ugaritic *ʿ'd';.*[28] Spanish *'laúd';* German *'Laute';* French *'luth'* and so forth. The long-necked lute type in the OED is orthographed as *tambura; tambora; tamera; tumboora; tambur(a)* and *tanpoora*. We have an Arabic *ṭunbur;* Persian *tanbur;* Armenian *pandir;* Georgian *panturi* and a Serbo-Croat *tamburitza*.

The Greeks called it *pandura; panduros; phanduros; panduris* or *pandurion*. The Latin is *pandura*. It is attested as a Nubian instrument in the third century B.C. The earliest literary allusion to lute types in Greece comes from Anaxilas in his play The Lyre-maker as '*trichordos*' which is the Sumerian **giš.sa.3** = *pitnu šelašti*[29]. According to Pollux, the trichordon was Assyrian and they gave it the name '*pandoura'*[30]. There is here some homophony with **b/pan.tur**, where Sumerian **giš b/pan** equates to Akkadian *qaštu (tilpanu)* = (wood)-'bow' and Sumerian '**tur**' equating to Akkadian *seẖeru* = 'small'. This is further reflected in Georgian where *tar*, *thir* and *tul*, also mean 'small'.

That the **gù.di** found its origins in the **ban.tur** may be hypothesised from the etymology of both terms. On the one hand, the small arched-harp, **ban.tur** which may have kept the name after the straightening of its neck, eventually led to *pandura* and, on the other, the gù.di led to either the '*rotte; rota; crwth'* or to the *'ʿūd'; ʿd; luth; lute; laute* and *laúd'.*

7) Conclusion

The implement pictured on the Uruk cylinder, should we agree that it is indeed from that period, would have been a forerunner of the long neck lute type, a tube-zither. I would say that the term tube-zither is not quite appropriate to describe the instrument under scrutiny. Since it has been common practice, for the last century, at least, to call some of these intruments long-neck lutes, I would like to propose that the item on the Uruk cylinder should be called a 'tube-lute'-type, mainly for the reason that characteristic tube-zithers have had their own evolution, independently from the lute-type instruments and have therefore been segregated from their earliest occurrence.

Illustrations

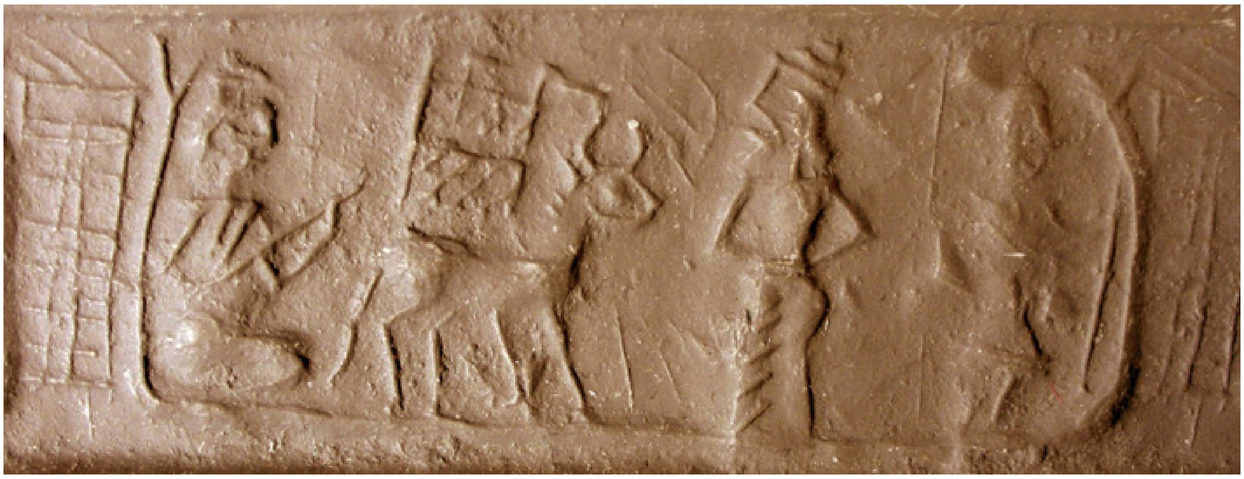


Fig.1. BM141632 'A'. Author's photograph. With kind permission of the Trustees of the British Museum. (2010)

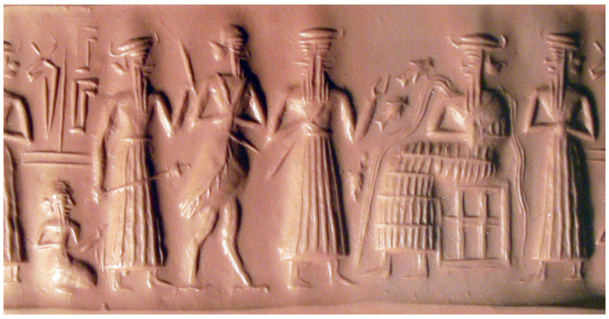


Fig. 2.BM 89096 'B'. Author's photograph. With kind permission of the Trustees of the British Museum. (2010)

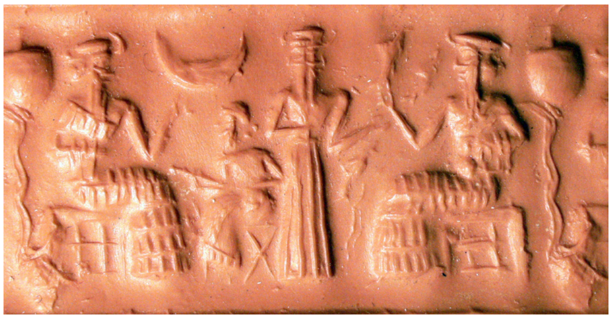


Fig. 3. BM 28806 'C'. Author's photograph. With kind permission of the Trustees of the British Museum. (2010)

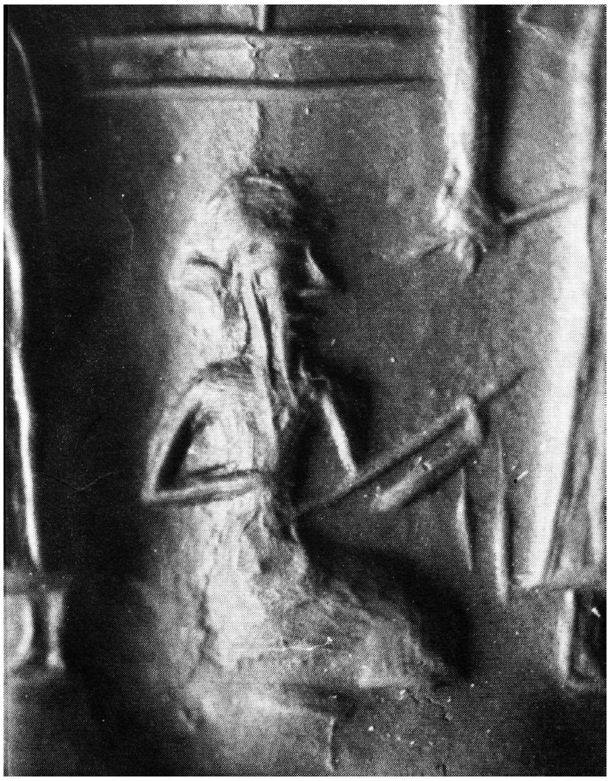


Fig. 2a. 'B', after Kilmer/Collon. (1980)

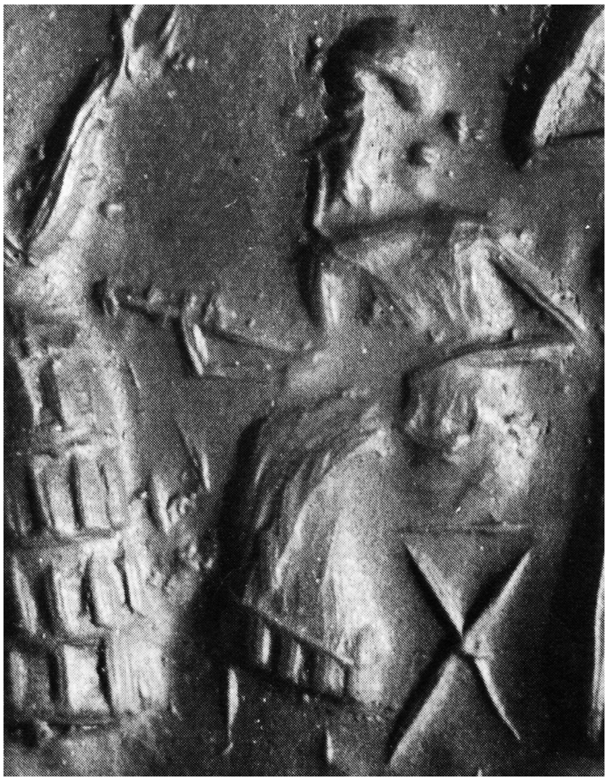
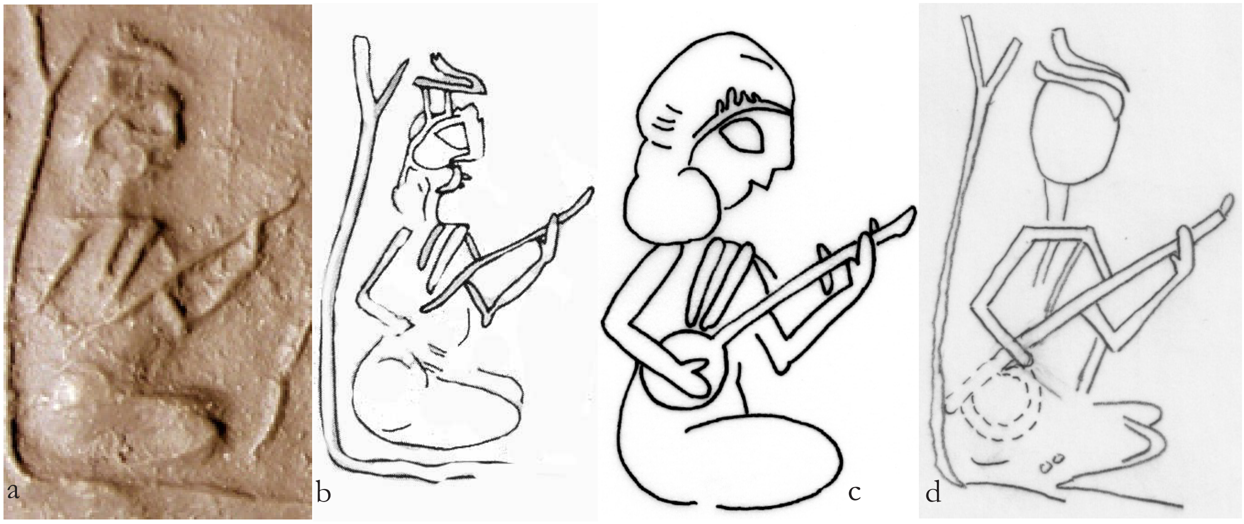


Fig. 3a. 'C', after Kilmer/Collon. (1980)



Figs. 4a, b, c and d. Figure a is the original. In b, which is Collon's drawing, the stick is twisted and the round part is interpreted as the musician's posterior. In c, Higano/Dumbrill 1998 version, the interpretation is false. In d, the author assumes that the lapicide did not complete his depiction and completes in with dotted lines. From BM 141632.

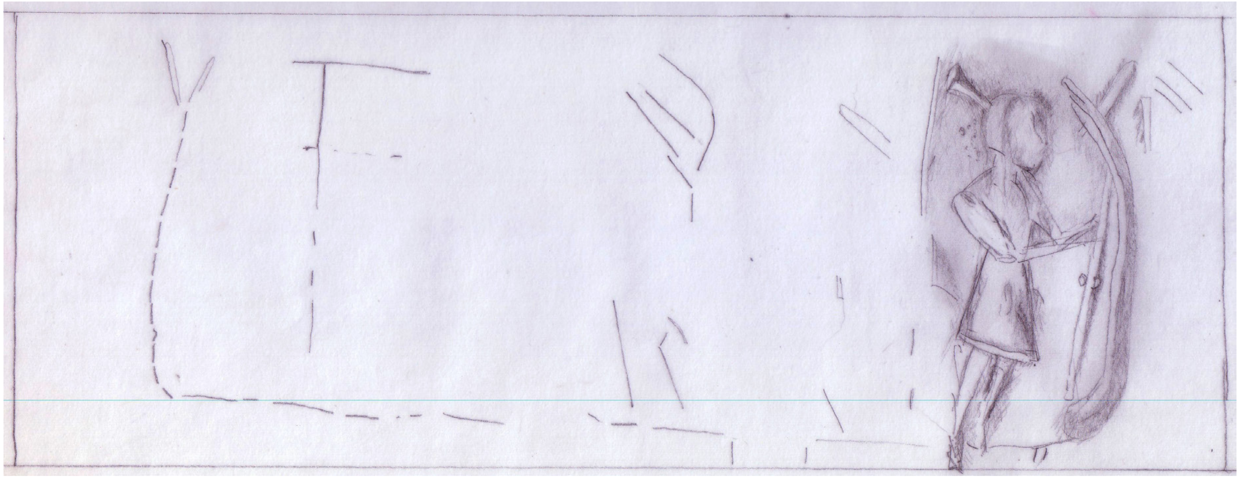


Fig. 5. Authors drawing of the traces of a previous carving of the cylindre BM 141632.

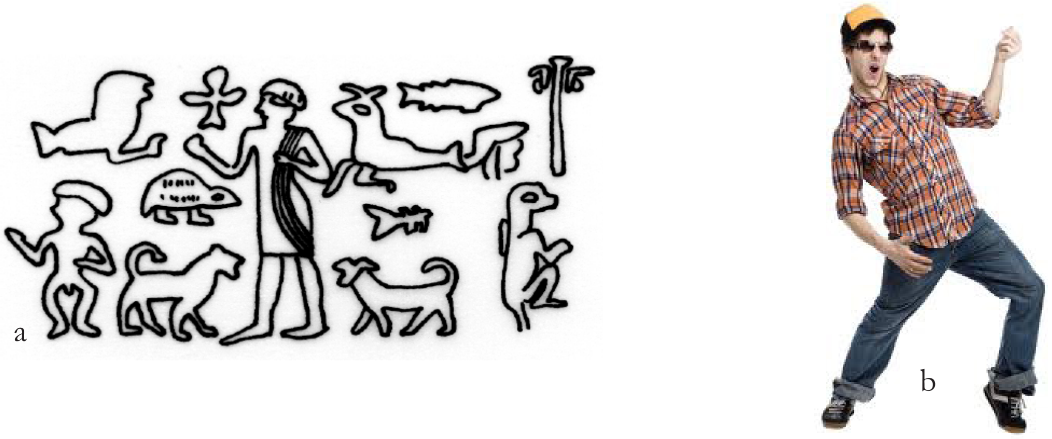
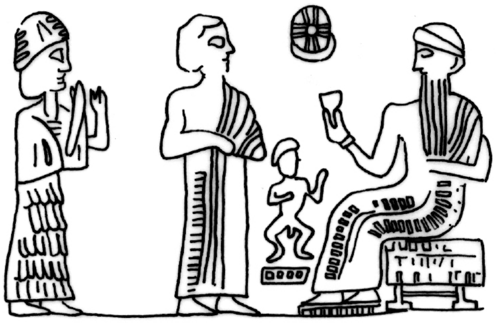


Fig. 6, a and b. Impression from black calcite seal cylinder, and detail. Iran. 2000 - 1500 B.C., (Speelers, 1943, p.138 and Collon, 1987/154. and d, modern air guitarist.



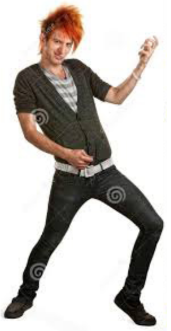
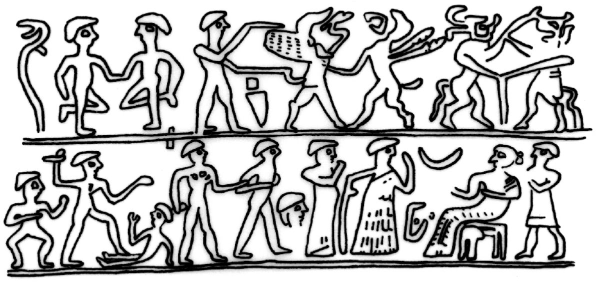


Fig. 6. c, Impression from lapis lazuli seal cylinder, and detail Isin/Larsa. 1500 - 1000 BC, (Speelers, 1943, p.138 and Collon, 1987/154. and d, modern air guitarist.



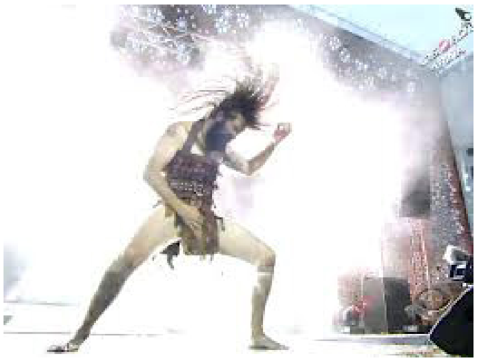


Fig. 6. e, impression from lapis lazuli seal cylinder, and detail Isin/Larsa. 2000 - 1500 B.C., BM86269. and f, modern air guitarist.

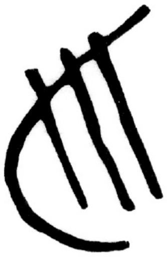


Fig. 7. a, Uruk period pictograph. 3200 - 3000 B.C.

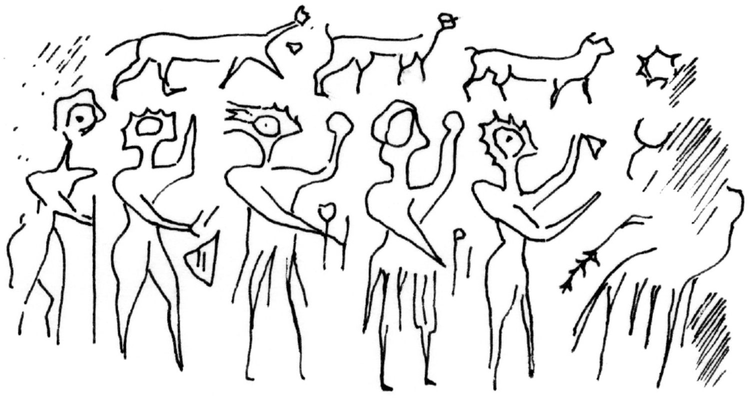


Fig. 7. b, From a seal impression from the Royal Cemetery at Ur, Iraq. 3000 - 2200 B.C. (Amiet 1770)

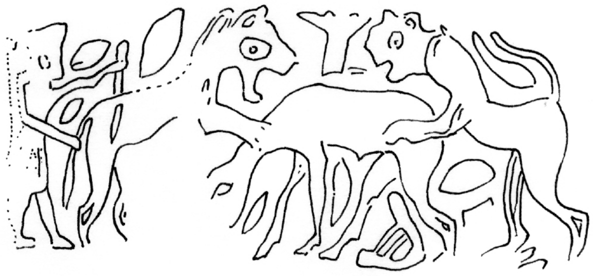


Fig. 7. c, Impression from seal cylinder. Nippur, the Temple of Inanna. 3000 - 2200 B.C.

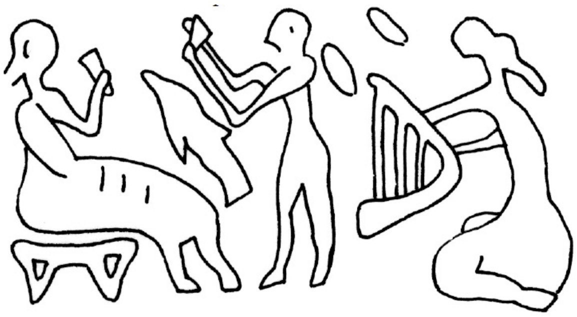


Fig. 7. d, Impression from seal cylinder. Ur, Iraq. 3000 - 2200 B.C. (Legrain 1936/169; Collon 1987/4)

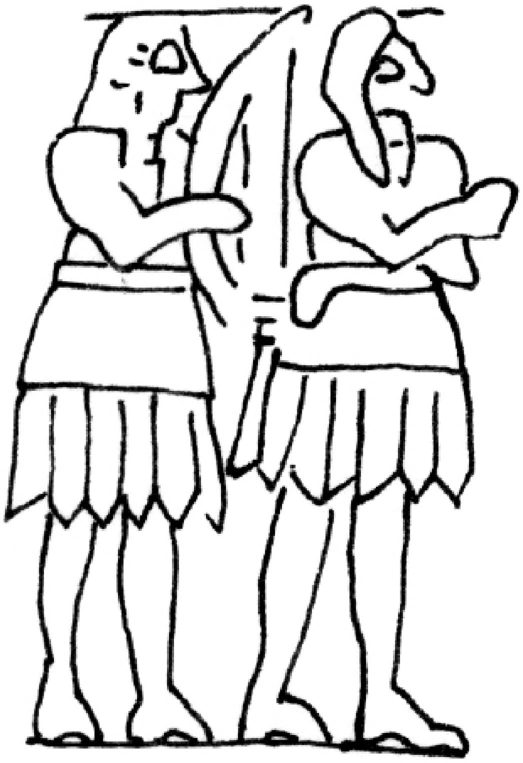


Fig. 7. f, Stone stele and detail. Khafajeh, Iraq. 3000 - 2200. (Frankfort 1954/33a; Woolley I, Pl. 182; De Gruyter CT2.)

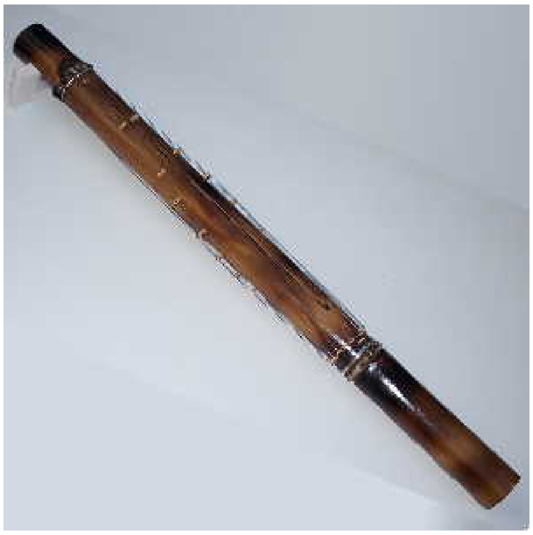


Fig. 8. a, Valiha, Malagasy bamboo tube zither, modern

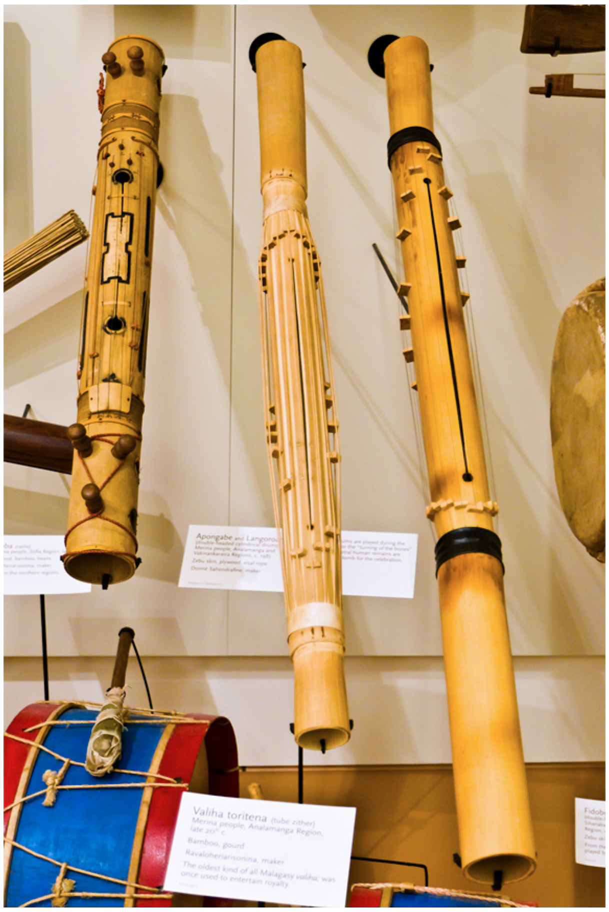


Fig. 8. b, Group of Valihas, Malagasy bamboo tube zithers, modern

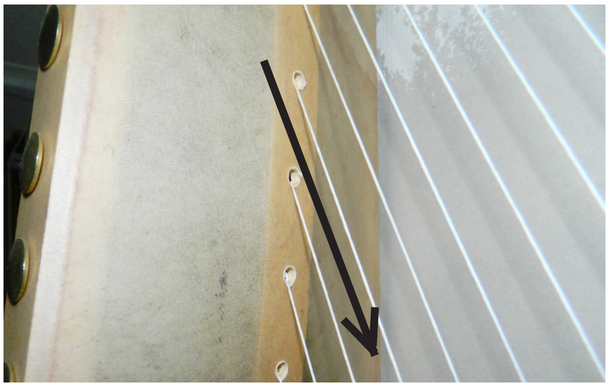


Fig. 9a. With the harp, the strings pull out the soundboard in extraction. From the author's collection.

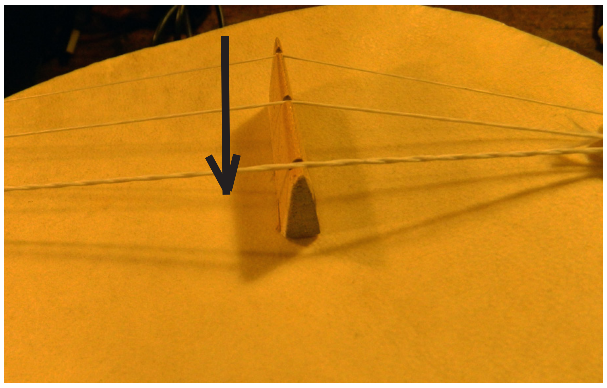


Fig. 9b. With the lute types and LNLTs, the strings push in the soundboard in pression. From the author's collection.

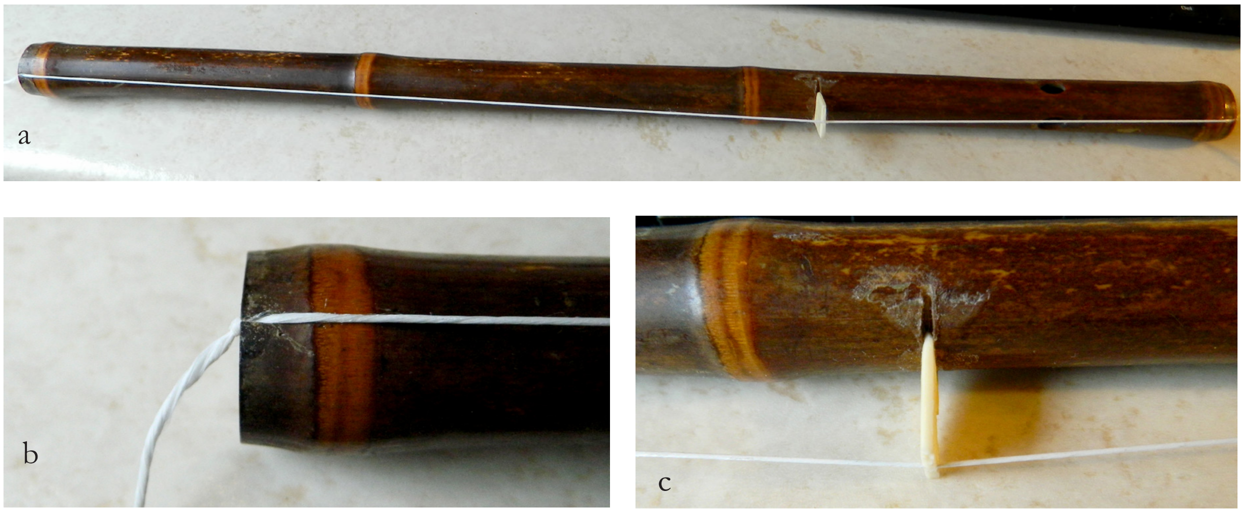


Fig. 10a, General view of the tube-zither; b, attachment of the string at one end of the tube-zither. The other end is similarly attached; c, fixed bridge on the tube-zither.

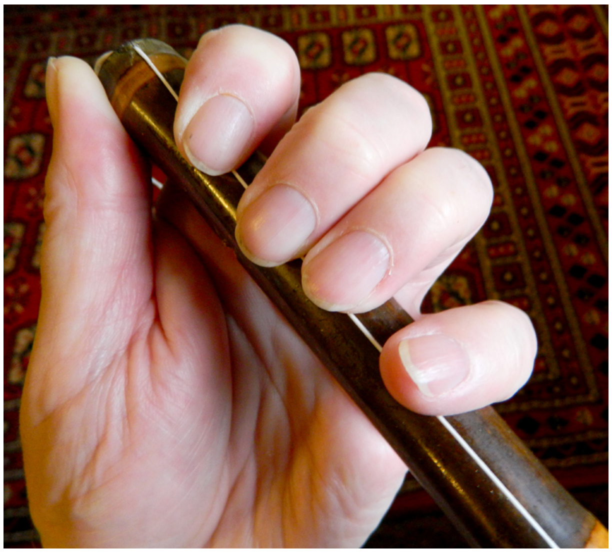


Fig. 11. Finger positions on the tube-zither. Here the fingers give tone with the index finger, tone with the major, semitone with the annular and fifth with the auricular.

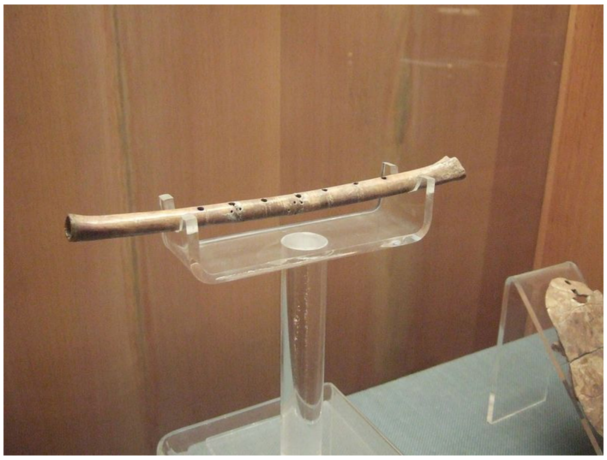


Fig. 12. Neolithic bone flute. Henan Provincial Museum.

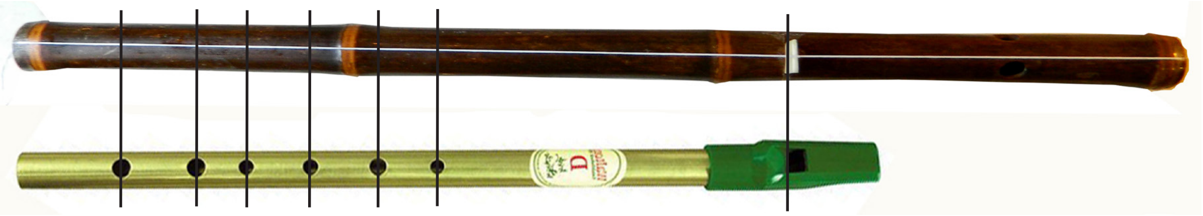


Fig. 13. Note that the finger positions on the tube-zither, generating an approximate diatonic scale, equate to the position of the holes drilled in the tin-whistle and that the labium of the whistle which defines the speaking length of the whistle is also in alignment with bridge of the tube-zither which also defines the speaking length of the string with which it is fitted.

References

1 Collon, D., 'Lute or paddle', In Monumentum Marcelle Duchesne-Guillemin, *Acta Iranica 34,* (Peeters, 1999), pp. 477-484. There, Collon writes that *'...the seal is made of a dark grey, almost black stone which is lighter where the surface has been worked or damaged. It is relatively squat in size (2.55 x 2.1 cm) with a perforation drilled from both ends, with slightly flaring extremities and a diameter of about 0.55 cm. It bears an incised design which, in its present form, is crudely executed but this is due to recutting of a worn original. This recutting is probably recent as are the various scratch marks on the surface of the soft stone. Although it could be argued that the seal is an outright forgery, I do not believe this to be the case and everything indicates the recutting of worn pecked shapes made with a different tool around 3100 BC. The design is very close to that on a cylinder seal from the 'Sammelfund' at Uruk (Heinrich, 1936, pl. 17a) which probably also dates to around 3100 BC. The Uruk seal (Moortgat, 1940, no. 30: Amiet, 1980, no. 655; Collon. 1987, no. 897) is made of lapis lazuli and measures 4.3 x 3.5 cm; it is therefore larger but it has precisely the same proportions as the British Museum seal.'*

2 It is with the greatest caution that the identification of an item should be taken as often subjective interpretations distort author's minds where each sees the object with which they are familiar. For instance a musicologist might find stringed instruments whenever vertical lines are drawn; they might be bars of a cage or the linear decoration of a pot. A weaving specialist would find vertical looms whenever vertical lines are depicted, etc. This is why before any definite - if anything can ever be definite in this field - identification can be indubitably established. I shall use general terms such as 'implement' and whenever a stringed instrument cannot be differentiated from another, I will use 'stringed-instrument'. It is a regrettable habit of most archaeologists and other historians of naming long, or short-necked plucked instruments 'lutes' as the word 'lute' addresses to a specific type of long, or short-necked plucked instruments. These identifications remain, even in authoritative and often revised works such as the Sachs-Hornbostel classification for they say that the strings of the lyre are attached to a yoke which lies in the same plane as the soundboard and consists of two arms and a cross-bar, and of the harp that the plane of their strings lies perpendicular to the soundboard surface. While not inexact, *per se*, it misses the point that the distinction between them is the method of soundboard excitation. With lyres and lutes the strings excite the soundboard by compression, as the strings press on the soundboard by means of a bridge, while with harp types the soundboard is excited by means of extraction, the soundboard being pulled out by the tension of the strings. These two radically different means of soundboard excitation are obvious upon hearing each instrument.

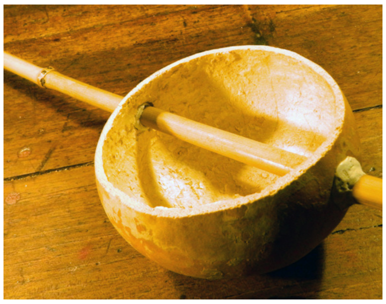
3 Collon, D., Draffkorn Kilmer, A., 'The Lute in Ancient Mesopotamia', *Music and Civilisation*, The British Museum Yearbook 4, Mitchell, T.C., Ed. Published for the Trustees of the British Museum by British Museum Publications Ltd., (London, 1980), pp. 13-28.

4 There is evidence of a round, if not hemispherical, or spherical structure placed under the wooden stick. Initially, I assumed that it might have been the representation of the crouched musician's right knee. However, three-quarters depictions had not yet entered into the artistic mind at that time and would only appear during the Classical Greek period. Therefore this rounded thing could well have been a soundbox hanging below at the lower extremity of the stick as is also see on some tube-zithers. Collon sees there the posterior of the musician. See figures 4a, b, c and d.

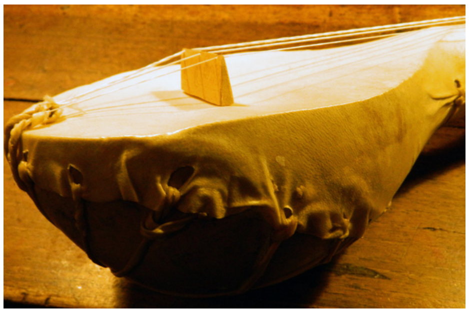
5 Fret (n.) 'ornamental interlaced pattern,' late 14c., from Old French frete 'interlaced work, trellis work,' probably from Frankish 'fetur' or another Germanic source (cf. Old English fetor, Old High German feggara 'fetter') perhaps from notion of 'decorative anklet', or of materials 'bound' together. The other noun, 'ridge on the fingerboard of a guitar,' is c.1500 of unknown origin but possibly another sense of Old French 'frete'. (http://www.etymonline.com/index.php?allowed_in_frame=0&search=fret&searchmode=phrase).

This clearly means that in organological terms there must be a distinction between a fret which is inlaid onto the fingerboard surface, and a ligature which is raised, physically, on the fingerboard, usually with twisted gut wound around the neck of the instrument and knotted at the back or at the side.

6 Resonators and sound-boxes are different in their function and structure. The primitive musical bow illustrated below is an example of resonator where the sound generated by the string which is stretched by the flexibility of the bow with gather into the empty calabash for resonance. (Author's collection)



A sound-box as depicted below, from a bottle-gourd 'lute' shows that a membrane made of lamb hide has been stretched onto the opening of the gourd. There the membrane acts as amplifier and combines with the volume of the gourd for resonance. With this instrument the lack of opening on the membrane prevents the efficient contribution of resonance. These opening will develop in the first millennium B.C. (Author's collection.)



7 Jiahu was the site of a Neolithic Yellow River settlement based in the central plains of ancient China, modern Wuyang, Henan Province. Archaeologists consider the site to be one of the earliest examples of the Peiligang culture. Settled from 7000 to 5800 B.C., the site was later flooded and abandoned. The settlement was surrounded by a moat and covered an area of 55,000 square metres. Discovered by Zhu Zhi in 1962, extensive excavation of the site did not occur until much later. Most of the site still has not been excavated. The average size of the bone flute is approximately 20 cm long and 1.1 cm in diameter, and the bone flutes are made from the wings of the red-crowned crane. These open-ended bone flutes have a variety of number of holes, ranging from one to seven holes; however there are some with eight holes, seven in front and one in back. The bone whistles are much shorter with lengths from 5.7 cm to 10.5 cm long with only a couple of holes. The number of holes and the spacing of the holes depended on what pitch the flute was supposed to make. Lee and Shen believed that the Chinese understood the 'resonance of an air column' and were able to create an instrument that contained their 'complete interval preference of Chinese music'. Blowing into an end-blown bone flutes produces the same effect as blowing into a glass bottle. It was also believed that the eight open holes flute could play 'all harmonic intervals and two registers'. These harmonic intervals are said to be a 'function of culture' and were of a larger set compared to the West. Bone flutes were also used for sacrificial purposes as well as bird hunting. Gudi are not very common now, but there are still people who continue to use these flutes for their music. See Chang, Lulu Huang, ‘From Confucius to Kublai Khan’, *The Institute of Mediaeval Music,* (Canada, 1993), pp. 2-7; Lee, Yuan-Yuan and Sin-Yan Shen, 'Chinese Musical Instruments', *Chinese Music Society of North America*, (Chicago, 1999), pp. 63-6; Shen, Sin-Yan, 'China, A Journey into Its Musical Art’, *Chinese Music Society of North America*, (Chicago, 2000), pp. 107-8; So, Jenny F. ed. 'Music in the Age of Confucius', *Freer Gallery of Art and Arthur M Sackler Gallery*, (Washington, D.C., 2000), 88-90; Wu, Ben, Archaeology and History of Musical Instrument in China. *The Garland Encyclopedia of World Music East Asia: China, Japan, and Korea*. Vol. 7. Ed Robert C. Province, Yosihiko Tokumaru, and J Laurence Witzleban. (New York, Routledge, 2002), 105-6; Zhang, JuZhong, Garman Harboolt, Changsui Wang, and ZhaoChen Kong, 'Oldest playable musical instrument found at Jiahu early Neolithic site in China,' *Nature*, 23 September 1999.

8 http://www.flutopedia.com/dev_flutes_euroasia.htm

9 Stauder, W., ‘Zur Frühgeschichte der Laute’ *Festschrift Helmut Osthoff* (Tutsing, 1961), p. 15ff.

10 Landberger, B., MSL 4, 21; Römer, W. H. P., *Sumerischen 'Königshymnen' der Isin-Zeit*, p. 197; Collon/Kilmer, in opus cit., p. 15 ff.

11 Sumerian gù-dé, Akkadian *nagāgu*, 'to roar, bray'; *sagāmu* 'to cry out'. Literally 'shouting-head'.

12 CAD I 151f. *inu* A.

13 Ḫḫ

14 VII B 38-116: MSL 6, 118-125.

15 VII B 117-185: MSL 6, 125-129.

16 Ḫḫ VIIB 117-134.

17 Ḫḫ VII B.

18 *AfO* 7, 273, *erimḫus*III, 93

19 Proto-Lù.

20 MSL 12, 56:639 f.

21 Emesal vocabulary II, 152.

22 Antagal D, 178ff.

23 Langdon's Oxford editions of Cuneiform Texts.

24 Lugale VIII, 23.

25 Thureau-Dangin SAK (Leipzig, 1907), p. 96f.; SAHG, (Zürich and Stuttgart, 1953), p. 144.

26 Castellino, 'Two Shulgi Hymns' (B and C), Atudi Semitici, Vol. 42, (Rome, 1972), pp. 47-9, II pp. 155-72.

27 In a verbal communication Gérard Huet told me that the Sanskrit word 'rudri' (fem.) is an abbreviation of 'rudravInA', that is 'vinA' of 'rudra'. Monier-Williams defines it as a stringed instrument, 'sorte de luth ou de guitare'. See Daniélou, *L’Inde du Nord* (Buchet/Chastel, 1966).

28 In *Šachar* and *Šalim*, l. 12 as *šb’d.yrgm.’l.*’d = seven times to be recited to the accompaniment of the 'lute'?; Gordon, C.H., *Ugaritic Literature* (1949), p.59; Driver, G.R., *Canaanite Myths and Legends* (Edinburg, 1956), p. 120f., and Caquot, A., *Textes Ougaritiques* I(1974), pp. 370 f. and n.1.

29 MSL VI, 124, In Ḫḫ VII B Gap a, line b.

30 West, M.L., *Ancient Greek Music* (Oxford, 1992), p. 80, fn. 144.